IFW AF 1771

In the United States Patent and Trademark Office

Appellants:	PALACIO et al.	Docket No.:	16,422
Serial No.:	09/992,110	Group:	1771
Confirmation No:	7471	Examiner:	Cole, Elizabeth M.
Filed:	November 5, 2001	Date:	October 27, 2004
For:	Method of Recycling Bonded Fibrous Materials and Synthetic Fibers and Fiber-like Materials Produced Thereof		

Amended Brief on Appeal to the Board of Patent Appeals and Interferences

Mail Stop Appeal Brief - Patents
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. 1.192, Appellants respectfully submit this Amended Appeal Brief in support of their Appeal of the **Final Rejection** of claims 1-27 which was mailed on December 11, 2003.

On May 11, 2004, Appellants, pursuant to 37 C.F.R. 1.191, mailed a Notice of Appeal with a Petition for a Two Month Extension of Time. Thus, the time period for filing the Appeal Brief was set to end on July 12, 2004, since July 11, 2004 fell on a Sunday.

On July 12, 2004, Appellants, in accordance with 37 C.F.R. 1.192(a) timely filed an Appeal Brief. A Notification of Non-Compliance With 37 C.F.R. 1.192(c) was mailed on October 5, 2004.

In response thereto, Appellants respectfully submit this Amended Appeal Brief in triplicate.

Real Party in Interest

The present Application has been assigned to the Colombiana Kimberly Colpapel S.A.

Related Appeals and Interferences

There are no other appeals or interferences known to Appellants, their legal representatives or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision on this appeal.

Status of the Claims

Claims 1-27 remain in the application with claims 1-27 being finally rejected.

Status of Amendments Filed Subsequent to Final Rejection

No Amendments after Final Rejection were filed.

Summary of the Invention

Paper and textile materials made entirely of natural and/or cellulosic fibers are frequently recycled by various techniques (page 1, lines 10 – 25). However, textiles composed partially or entirely of synthetic fibers have generated problems for conventional processes focused on recycling natural and/or cellulosic fibers (page 1, lines 26 – 29). Therefore, fabrics comprised of synthetic fibers have generally been recycled by reclaiming the synthetic thermoplastic material thereof as recycled polymer feedstock, or by mechanically tearing and shredding the fabrics into recycled fibers present partly in the form of flocks or fiber bundles (page 2, line 4 to page 3, line 20). Such techniques fail to address many existing needs such as, for example, a wet process

to substantially isolate or individualize fibers and/or filaments from textiles composed partially or entirely of synthetic fibers (page 3, line 21 to page 4, line 6).

The present invention provides a method of recycling bonded fibrous materials. The method includes the steps of: i) providing pieces of bonded fibrous materials, the pieces having sizes that are adapted for suspension in a liquid; ii) suspending the discrete pieces of bonded fibrous materials in a liquid; iii) applying mechanical work to the liquid suspension of discrete pieces to generate hydraulic pressure and mechanical shear stress conditions sufficient to hydraulically fragment the bonded fibrous materials into fibers and fiber-like components; and iv) separating substantially individual fibers and fiber-like components from the liquid (page 4, line 34 to page 5, line 10). The bonded fibrous materials can include synthetic fibrous material (page 7, lines 28 – 30).

In another aspect, the present invention provides recycled synthetic fibers and fiber-like materials that include at least one thread element composed of synthetic material having at least one irregular distortion generated by hydraulic fracture of the thread element to separate it from a bonded fibrous material while the bonded fibrous material is suspended in a liquid (page 8, lines 7 – 12).

The Issues Presented

Are claims 1-27 patentable under 35 U.S.C. § 103(a) over U.S. Patent 4,753,682 to Didwania et al. in view of WO 96/06222 to Milding et al.?

Grouping of the Claims

Appellants have grouped the claims as follows:

Group	Claims
1	1-16
2	17-27

Argument

Claims 1-27 Are Not Obvious Under 35 U.S.C. § 103(a) Over U.S. Patent 4,753,682 to Didwania et al. in View of WO 96/06222 to Milding et al.

The final Office Action rejected claims 1 – 27 under 35 U.S.C. § 103(a) as allegedly being obvious to one of ordinary skill in the art at the time the invention was made and thus unpatentable over U.S. patent number 4,735,682 to Didwania et al. (hereinafter referred to as Didwania et al.) in view of WO 96/06222 to Milding et al. (hereinafter referred to as Milding et al.).

On the issue of obviousness, it is well established that the Patent and Trademark Office has the burden under § 103 of establishing a *prima facie* case of obviousness. See M.P.E.P. § 2142; In re Piasecki, 745 F.2d 1468, 223 U.S.P.Q. 785 (Fed. Cir. 1984). In particular, the Patent Office must show that, in view of the teachings of Didwania et al. taken with the teachings of Milding et al., the claimed subject matter as a whole would have been obvious at the time the invention was made to one of ordinary skill in the art. See 35 U.S.C. § 103(a). It

is well settled that teachings of references can be combined only when there is some objective teaching or suggestion in the references themselves or knowledge generally available to one of ordinary skill in the art as to the desirability or incentive of such a combination. See In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). The mere fact that the prior art can be combined or modified in the manner suggested by the Patent Office does not make the combination or modification obvious unless the prior art suggested the desirability of the combination or modification. See In re Fritch, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992); In re Mills, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). If the prior art provides no reason for one of ordinary skill in the art to modify the prior art as taught by the claimed invention, the modification would not have been obvious.

Additionally, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. See In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

It is the Applicants' position that the Patent and Trademark Office has failed to establish a *prima facie* case with respect to the combination of teachings from Didwania et al. and Milding et al.

A. No Suggestion or Motivation Exists to Combine Didwania et al. with Milding et al. in the Manner Suggested in the Office Action.

Didwania et al. discloses a method of separating cellulosic fibers from latex bonded paper broke (column 1, lines 8-10). The method includes the steps of shredding the latex bonded paper broke, pulping the broke in an aqueous alkaline solution, and deflaking the pulp

to form cellulosic fibers with latex solids remaining attached thereto (column 2, lines 28-68). Didwania et al. describes the difficulties encountered when using conventional methods for repulping latex bonded broke (column 1, lines 37-50). For example, excessive mechanical action requires excessive energy use and results in loss of usable fibers. Excessive chemical treatment causes separation of the latex from the cellulosic fibers and subsequent processing problems. Thus, the method taught by Didwania et al. apparently employs the simultaneous combination of mild chemical treatment and mild mechanical treatment that breaks the latex bonds followed by deflaking that separates the cellulosic fibers from one another. In Example 1, latex bonded broke was repulped in 1.5 mol percent sodium hydroxide resulting in approximately 20 weight percent fiberization (column 3, lines 14-23). Inclusion of the deflaking step in Example 2 resulted in about 90 percent fiberization (column 3, lines 24-30) without separation of the latex from the fibers (column 3, lines 31-45). Thus, Didwania et al. teaches a specific treatment method designed for recycling latex bonded paper broke. Because its teaching is so narrowly focused, Didwania et al. provides no suggestion or motivation for one skilled in the art to extend the teaching thereof to raw materials other than latex bonded paper broke.

Milding et al. discloses a nonwoven material produced by hydroentangling a fiber web including recycled fibers that are mechanically freed from nonwoven waste (abstract). Milding et al. teaches that the recycled fibers can be recycled by mechanical shredding of the waste, whereby the material is cut into small bits that, with the help of spiked rollers, are torn up so that the fibers are freed (page 3, lines 18-21). Milding et al. does not teach or suggest that the mechanically freed fibers may be recycled by suspending discrete pieces of bonded fibrous materials in a liquid and applying mechanical work to the liquid suspension to generate

hydraulic pressure and mechanical shear stress conditions sufficient to hydraulically fragment the bonded fibrous materials into fibers and fiber-like components. Importantly, Milding et al. provides no suggestion or motivation for one skilled in the art to combine the teachings thereof with a reference that teaches a method of recycling latex bonded paper broke. Because the cited references provide no motivation or suggestion for one skilled in the art to combine the cited references, a *prima facie* case of obviousness has not been established.

The Office Action asserts that it would have been obvious to have employed fabrics comprising natural fibers, synthetic fibers, or mixtures of the two as the fibrous material of Didwania et al. The Office Action further asserts that one skilled in the art would be motivated to employ such fibrous materials by the teaching of Milding et al. that fabrics comprising both types of fibers can be broken down into recycled fibers. However, such an assertion suggests that one skilled in the art would be motivated to use the recycling process taught by Didwania et al. with any type of "recyclable" fiber. Conversely, such an assertion suggests that one skilled in the art would be motivated to use the starting materials of Milding et al. with any and every known recycling process. This is contrary to the teachings of Didwania et al., which suggest only that the specific process thereof is useful for recycling latex bonded paper broke. Also, prior to Applicants' disclosure, one skilled in the art would have been unlikely to adopt such a view. As indicated in Applicants' disclosure and as known to one skilled in the art, woven and nonwoven fabrics composed partially or entirely of synthetic or manufactured fibers were known to generate problems for conventional processes focused on recycling natural and/or cellulosic fibers. These types of fabrics were generally difficult or impossible to disperse into individual fibers in a wet process such as a pulping operation. As just one example of possible problems, fiber or filament ropes could form. Such problems were

particularly apparent for synthetic fibers joined by thermal or adhesive bonding, and for fibers longer than those typically processed by wet forming operations. Thus, prior to Applicants' disclosure, one skilled in the art would have been dissuaded from using wet processes such as taught by Didwania et al. to recycle the bonded fibrous materials that are taught as recyclable by Milding et al. Because one skilled in the art would be dissuaded rather than motivated to combine these references, the cited references cannot properly be combined, and therefore do not establish a *prima facie* case of obviousness.

B. The Didwania et al. and Becker et al. References, When Combined, Do Not Teach or Suggest All the Claim Limitations of Claim 1.

Additionally, the combination of the cited references does not teach or suggest all the limitations of independent claim 1 nor the claims that depend therefrom. For example, the combination of Didwania et al. and Milding et al. neither teaches nor suggests hydraulically fragmenting bonded fibrous materials comprising synthetic fibrous material into fibers and fiber-like material. As discussed above, Didwania et al. teaches the breaking of latex bonds and the separation of pulp fibers from one another without separation of latex from the fibers. Didwania et al. does not teach that the fibers are hydraulically fragmented as required by claim 1, only that the latex bonds are broken. Milding et al. refers only to mechanical shredding, and therefore does not correct the deficiency of Didwania et al. Because the cited combination does not teach or suggest all the limitations of independent claim 1 nor the claims that depend therefrom, the cited combination does not establish a *prima facie* case of obviousness.

C. The Didwania et al. and Becker et al. References, When Combined, Do Not Teach or Suggest All the Claim Limitations of Claim 17.

Furthermore, the combination of the cited references does not teach or suggest all the limitations of independent claim 17 nor the claims that depend therefrom. For example, the combination of Didwania et al. and Milding et al. neither teaches nor suggests recycled synthetic fibers and fiber-like materials comprising at least one thread element composed of synthetic material having at least one irregular distortion generated by hydraulic fracture of the thread element to separate it from a bonded fibrous material while the bonded fibrous material is suspended in a liquid. As discussed above, Didwania et al. does not teach that the fibers thereof are hydraulically fractured as required by claim 17. Also, Didwania et al. does not teach an irregular distortion generated by the hydraulic fracture of the fibers. Didwania et al. merely teaches the breaking of latex bonds and the separation of pulp fibers from one another without separation of latex from the fibers. However, claim 17 requires a thread element having an irregular distortion generated by hydraulic fracture of the thread element. Milding et al. refers only to mechanical shredding, and therefore does not correct the deficiency of Didwania et al. Because the cited combination does not teach or suggest all the limitations of independent claim 17 nor the claims that depend therefrom, the cited combination does not establish a *prima facie* case of obviousness.

Double Patenting Rejection

Appellants note that claims 1-27 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-20 of copending Application No. 10/012,768 and over claims 1-20 of copending Application No. 10/012,766. Appropriate

terminal disclaimers will be provided, if necessary, upon the allowance of claims in the present application.

Conclusion

For the reasons stated above it is Appellants' position that the Examiner's rejection of claims has been shown to be untenable and should be **reversed** by the Board.

Please charge the $330.00 fee, pursuant to 37 C.F.R. 1.17(c), for filing this Appeal Brief to Kimberly-Clark Worldwide, Inc. deposit account number 11-0875. Any additional prosecutional fees which are due may also be charged to deposit account number 11-0875.

The undersigned may be reached at: 770-587-8626

Respectfully submitted,

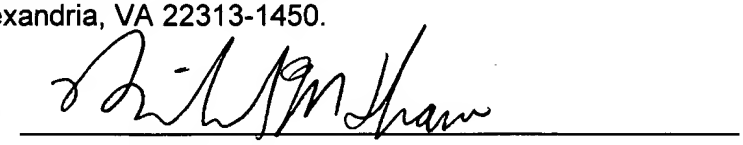
PALACIO ET AL.

By: 

Richard M. Shane
Registration No.: 50,921

CERTIFICATE OF MAILING

I, Richard M. Shane, hereby certify that on October 27, 2004 this document is being deposited with the United States Postal Service as first-class mail, postage prepaid, in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: 

Richard M. Shane

Appendix – The Claims On Appeal

The claims on appeal are:

1. A method of recycling bonded fibrous materials, the method comprising,

providing pieces of bonded fibrous materials comprising synthetic fibrous material, the pieces having sizes that are adapted for suspension in a liquid;

suspending the discrete pieces of bonded fibrous materials in a liquid;

applying mechanical work to the liquid suspension of discrete pieces to generate hydraulic pressure and mechanical shear stress conditions sufficient to hydraulically fragment the bonded fibrous materials into fibers and fiber-like components; and

separating substantially individual fibers and fiber-like components from the liquid.

2. The process of claim 1 wherein the step of providing discrete pieces of bonded fibrous materials comprises an operation to reduce the size of unitary bonded fibrous materials into discrete pieces that are adapted for suspension in a liquid, the operation being selected from mechanical shredding, mechanical cutting, mechanical tearing, mechanical grinding, water jet cutting, laser cutting, garnetting and combinations thereof.

3. The process of claim 1 wherein the mechanical work is applied to the liquid suspension utilizing a combination of blades mounted on a rotating roll and blades mounted on a fixed plate to generate areas of very high hydraulic pressure and mechanical shear stress.

4. The process of claim 3 wherein the blades mounted on the fixed plate are aligned at an angle in at least one dimension with respect to the direction of rotation of the rotating blades.

5. The process of claim 4 wherein the angle is between 20 degrees and 70 degrees.

6. The process of claim 1 wherein the mechanical work is applied to the suspension in multiple stages.

7. The process of claim 6 wherein mechanical work is applied to the suspension utilizing a first stage under conditions to generate hydraulic pressure and mechanical shear stress sufficient to wet the pieces of bonded fibrous materials and separate at least some portions of fibers and fiber-like components from the bonded materials and utilizing a second stage under conditions to generate hydraulic pressure and mechanical shear stress conditions sufficient to rupture the bonded fibrous materials, fibers and fiber-like components into substantially individual fibers and fiber-like components.

8. The process of claim 6 wherein the clearance between the rotating blades and the fixed blades at the closest point during the first stage is between about 20 millimeters and about 100 millimeters and between about 1 millimeter and about 20 millimeters during the second stage.

9. The process of claim 1 wherein the amount of mechanical work applied to the liquid suspension is greater than about 6 Horsepower – 24 hours per dry ton of bonded fibrous material.

10. The process of claim 1 wherein the bonded fibrous materials are selected from woven fabrics, knitted fabrics, nonwoven webs and combinations thereof.

11. The process of claim 10, wherein the nonwoven webs are webs that are thermally bonded, adhesively bonded, mechanically entangled, solvent bonded, hydraulically entangled and combinations thereof.

12. The process of claim 1 wherein the bonded fibrous materials further comprise natural fibrous materials.

13. The process of claim 1 wherein the synthetic fibrous material includes thermoplastic fibers and filaments.

14. The process of claim 1 wherein the substantially individual fibers and fiber-like components have a relatively uniform length distribution.

15. The process of claim 14, wherein the fiber and fiber-like material has a length distribution that spans approximately 7 millimeters.

16. Fiber and fiber-like materials produced according to the process of claim 1.

17. Recycled synthetic fibers and fiber-like materials comprising:

at least one thread element composed of synthetic material having at least one irregular distortion generated by hydraulic fracture of the thread element to separate it from a bonded fibrous material while the bonded fibrous material is suspended in a liquid.

18. The recycled synthetic fibers and fiber-like materials of claim 17, wherein the thread element has a length ranging from about 1 millimeter to about 15 millimeters.

19. The recycled synthetic fibers and fiber-like materials of claim 18, wherein the thread element has a length ranging from about 1.5 to about 10 millimeters.

20. The recycled synthetic fibers and fiber-like materials of claim 18, wherein the thread element has a length ranging from about 2 to about 5 millimeters.

21. The recycled synthetic fibers and fiber-like materials of claim 17, wherein the irregular distortions are in the form of bends in the thread element, flattened segments of thread element, expanded segments of thread element and combinations thereof.

22. The recycled synthetic fibers and fiber-like materials of claim 17, wherein the thread elements of the recycled materials have surface areas that are greater than comparable thread elements in the bonded fibrous material prior to hydraulic fracture of the thread element to separate it from the bonded fibrous material.

23. The recycled synthetic fibers and fiber-like materials of claim 22, wherein the surface areas of the recycled thread elements are at least about 5 percent greater than comparable thread elements in the bonded fibrous material prior to hydraulic fracture of the thread element to separate it from the bonded fibrous material.

24. The recycled synthetic fibers and fiber-like materials of claim 17, wherein the synthetic material is a synthetic thermoplastic material.

25. A nonwoven fibrous web comprising the recycled synthetic fibers and fiber-like material of claim 17.

26. The nonwoven fibrous web of claim 25 wherein the web is formed utilizing a web forming process selected from wet forming, dry forming, foam forming and combinations thereof.

27. The nonwoven fibrous web of claim 25 wherein the web further includes non-recycled natural fibrous materials, non-recycled natural synthetic materials, recycled natural fibrous materials, particulates materials and combinations thereof.